

a temperature-sensitive element having a SAW chip with temperature-dependent transfer function, the SAW chip having a transducer designed to be connected to an antenna mounted on an outside of said mechanical part,

an encapsulation for said temperature-sensitive element, the encapsulation being designed to be placed and kept in position in a mounting hole in said moving mechanical part and thus exposed to temperature inside the mechanical part, and

a transmission line for connecting the antenna to the temperature-sensitive element,

whereby the device is adapted for measuring temperature inside the inaccessible mechanical part while the mechanical part is in motion.

2. (Amended) A device according to claim 1, wherein said encapsulation is composed of a hollow bolt designed to be screwed into said mounting hole, the temperature-sensitive element is arranged internally in the bolt, and the antenna is provided at a part of the bolt which protrudes from said mechanical part.

3. (Amended) A device according to claim 2, wherein said bolt is filled internally with a material for keeping the temperature-sensitive element in position.

4. (Amended) A device according to claim 3, wherein said material is epoxy or a heat-resistant rubber sleeve.

5. (Amended) A device according to claim 1, wherein said encapsulation is designed to be arranged separately at an inner end of said mounting hole and the device further comprises a bolt for closing the mounting hole and a material placed between said bolt and the encapsulation for holding the encapsulation securely in position after mounting.

6. (Amended) A device according to claim 5, wherein said material is a spring for pressing the encapsulation against the inner end of the mounting hole.

7. (Amended) A device according to claim 5, wherein said material is epoxy or a heat-resistant rubber sleeve.

8. (Amended) A system for monitoring the temperature inside inaccessible movable mechanical parts, comprising:

a sensor for each of the mechanical parts and including a temperature-sensitive element having a SAW chip with a temperature-dependent transfer function, the SAW chip having a transducer connected to a first antenna mounted on the outside of the respective mechanical part;

an encapsulation for the temperature-sensitive element, the encapsulation being placed and kept in position in a mounting hole in the respective mechanical part to measure temperature inside the mechanical part, the temperature-sensitive element being connected to the first antenna via a transmission line; and

a second antenna for the sensor of each mechanical part and arranged to transmit signals to and receive signals from the respective sensor via said first antenna while the mechanical part is in motion, said second antenna being connected via a signal cable with a control unit comprising a multiplexer;

wherein the control unit includes means for transmitting a polling signal to and for receiving a modified polling signal from the sensor of each mechanical part via an associated signal cable and associated second antenna while the respective mechanical part is in motion, the control unit further including means for processing the received modified polling signal, and, on the basis of the characteristics of the modified

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polling signal, for generating a data signal representative for the temperature of the sensor of the respective mechanical part.

9. (Amended) A system according to claim 8, wherein a plurality of reflectors are provided on said SAW chip, and the control unit includes means for measuring the absolute phases of the components of the modified polling signal connected to the respective reflectors and to generate said data signal on the basis of the differences between these absolute phases.

10. (Amended) A system according to claim 8 or 9, wherein the control device is further connected to a recording device via a data bus and is arranged to transmit said data signal which is representative for the temperature of the sensor to the recording device.

11. (Amended) A system according to claim 10, wherein the recording device comprises a store for storing the received data signals or values derived therefrom and a display device for displaying information on these stored values graphically or in the form of alphanumeric characters.

12. (Amended) A system according to claim 10, wherein the recording device is arranged to generate a signal indicating an alarm condition when it receives a data signal indicating that the temperature at one of the sensors is higher than a predefined threshold value.

13. (Amended) A system according to claim 12, wherein said signal indicating an alarm condition activates a visual or audible alarm.

14. (Amended) A system according to claim 12, wherein said signal indicating an alarm condition results in a reduction in the load, a reduction in the drive speed or

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shutting down of a machine, an engine or a process including the mechanical part whose temperature is being monitored.

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15. (New) A system for monitoring the temperature inside an inaccessible movable mechanical part, comprising:

a sensor including a temperature-sensitive element having a SAW chip with a temperature-dependent transfer function, the SAW chip having a transducer connected to a first antenna mounted on an outside of the mechanical part;

an encapsulation for the temperature-sensitive element, the encapsulation being placed and kept in position in a mounting hole in the mechanical part to measure temperature inside the mechanical part, the temperature-sensitive element being connected to the first antenna via a transmission line; and

a second antenna arranged to transmit signals to and receive signals from the sensor via said first antenna while the mechanical part is in motion, said second antenna being connected via a signal cable with a control unit;

wherein the control unit includes means for transmitting a polling signal to and for receiving a modified polling signal from the sensor via the signal cable and the second antenna while the mechanical part is in motion, the control unit further including means for processing the received modified polling signal, and, on the basis of the characteristics of the modified polling signal, for generating a data signal representative for the temperature of the sensor and the mechanical part.

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